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Notes:

1. Untranslatable words are replaced with asterisks (*).
2. Texts in the figures are not translated and shown as **Fig.**

Translated: 23:53:21 JST 12/01/2009

Dictionary: Last updated 11/13/2009 / Priority: 1. Electronic engineering

CLAIM + DETAILED DESCRIPTION

[Claim(s)]

[Claim 1] A navigation device for mount which the self-vehicle position is indicated by a screen with map data etc. using a display member characterized by comprising the following, and may make display luminance of said display member fluctuate by making it change to a setup for daytime, and a setup for night.

An indicator which may be changed by making emission quantity according substantial display luminance of a display performed using a display member to spontaneous light or auxiliary luminescence fluctuate.

A GPS transmitting and receiving part which obtains self-vehicle position data from geographic coordinate data produced by receiving an electric wave for positioning from a GPS Satellite.

A clock circuit part which obtains the present time information.

A calendar circuit part which obtains calendar data.

A selecting part which chooses said setup for daytime, and said setup for night based on correlation with geographic coordinate data, the present time information, and calendar data which were obtained from each of said GPS transmitting and receiving part, said clock circuit part, and said calendar circuit part.

A control part which makes substantial display luminance of said display member fluctuate based on a setup for daytime or a setup for night obtained by said selecting part.

[Claim 2] The navigation device for mount according to claim 1 constituting said indicator so that a screen display for performing an operation instruction, a check of operation, etc. of navigation may be performed.

[Claim 3] The navigation device for mount according to claim 1 or 2, wherein a display member of said indicator was formed with a display element which carries out spontaneous light, and said control part is constituted so that display luminance of said display member may be made

to fluctuate based on a setup for daytime or a setup for night obtained by said selecting part.
[Claim 4]A display member of said indicator comprises a Lighting Sub-Division member which illuminates the back or the side of a liquid crystal display element and this liquid crystal display element, and, [said control part] The navigation device for mount according to claim 1 or 2 constituting so that illuminance of said Lighting Sub-Division member may be made to fluctuate based on said setup for daytime, or said setup for night.

[Claim 5]The navigation device for mount according to claim 1 or 2 constituting said selecting part so that a judgment of said setup for daytime and said setup for night may always be performed.

[Detailed Description of the Invention]

[0001]

[Field of the Invention]The screen display for indicating the self-vehicle position by a screen with map data etc. using a display member, or performing an operation instruction, a check of operation, etc. of navigation is performed about the navigation device for mount, and. [this invention] It is related with the navigation device for mount which may make the display luminance fluctuate by making it change to a setup for daytime, and a setup for night.

[0002]

[Description of the Prior Art]Generally, [the indicator with which the navigation device for mount is equipped] It indicates to the display surface by a map, the display of carrying out the superimposed display of the self-vehicle position into it is performed, and the expected function which the device has can be demonstrated to the maximum extent by ordering it various operations, looking at these displays, or checking operation of apparatus.

[0003]The measure for which either when running in the time of vehicles running daytime, as for such a drop and the night can recognize the contents of a display visually certainly is adopted. That is, he is trying to control the display luminance in a drop according to each output of the "daytime mode of operation" and the "night mode of operation" obtained with operation of the light switch for turning on the head light provided in vehicles, or making the light put out.

[0004]Namely, [like the bright display A which brightness of the display in a drop is made bright when the light switch is changed to the "daytime mode of operation", and is typically shown in drawing 4] Even if it is in a bright outdoor daylight state, when it enables it to recognize the contents of a display visually certainly and the light switch is changed to the "night mode of operation", Display luminance in a drop is made dark and it is made dark like the low-intensity display B typically shown in drawing 4, It enables it to recognize the contents

of a display visually certainly, without a display being too dazzling even if it is in a dark outdoor daylight state, and enables it to recognize the contents of a display visually certainly in any [the case of a bright outdoor daylight state, and in the case of a dark outdoor daylight state] case.

[0005]When the display member in which spontaneous lights, such as a cathode-ray tube, are possible as a form of this drop is used, Using the display member in which spontaneous lights, such as a liquid crystal element, are impossible, the illumination light is applied, and it may be used from the back or the side, and is made a suitable thing also in which member corresponding to the mode in which display luminance qualitative as a matter of fact is two, daytime/night.

[0006]Thus, the luminescent brightness of an indicator is interlocked with the information on the light switch for changing the "daytime mode of operation" and the "night mode of operation", the navigation device for mount is controlled, and display luminance is made into two steps, the high-intensity display for daytime, and the low-intensity display for night, i.e., two steps.

[0007]Therefore, where it turned on the light switch in the daytime and a head light is turned on, in running (it runs daytime in many cases where a head light is turned on overseas). Since display luminance will be controlled based on the "night mode of operation" in spite of being daytime, in the display luminance for night, it will be in the state where it is dark and the contents of a display are not in sight easily.

[0008][for this reason based on the "present time information" obtained from the GPS transmitting and receiving part for receiving the positioning electric wave from a GSP (Global Positioning System) satellite, and obtaining a current position] The luminescent brightness of the indicator was switched to "a setup for daytime", and "a setup for night", and luminescent brightness is automatically switched to ON and OFF of the light switch not related (for example, indicated by JP,5-18767,A).

[Problem to be solved by the invention]

[0009]The conventional navigation device for mount is performing a setup for daytime of display luminance, and a setup for night based on the present time information obtained by the GPS transmitting and receiving part, Amendment by the geographic coordinate of the place which is carrying out vehicle running is not made, but when it is in a bright outdoor daylight state, a display becomes dark too much and it is sufficient, and in the case of a dark outdoor daylight state, a display is too dazzling, is hard to recognize the contents of a display visually to it, and to it them for this reason. Time required to check the contents of a display is taken mostly, and there is a possibility of it being unable to concentrate on operation or checking the operativity of the navigation device for mount.

[0010]Then, the purpose of this invention the brightness of a display of the navigation device

for mount regardless of the on/off state of a light switch, And amendment by the current position (geographic coordinate) of vehicles is performed, "a setup for daytime" and "a setup for night" can be performed automatically, and it is in providing the navigation device for mount which can carry out visual recognition of the contents of a display quickly.

[0011]

[Means for solving problem]In order to solve above-mentioned SUBJECT, the following characteristic composition is used for this invention.

[0012](1) The self-vehicle position is indicated by a screen with map data etc. using a display member, and the navigation device for mount which may make the display luminance of said display member fluctuate by making it change to a setup for daytime and a setup for night is provided with the following.

The indicator which may be changed by making the emission quantity according the substantial display luminance of the display performed using a display member to spontaneous light or auxiliary luminescence fluctuate.

The GPS transmitting and receiving part which obtains self-vehicle position data from the geographic coordinate data produced by receiving the electric wave for positioning from a GPS Satellite.

The clock circuit part which obtains the present time information.

. Were obtained from each of the calendar circuit part which obtains calendar data, and said GPS transmitting and receiving part, said clock circuit part and said calendar circuit part. The selecting part which chooses said setup for daytime, and said setup for night based on correlation with geographic coordinate data, the present time information, and calendar data, and the control part which makes the substantial display luminance of said display member fluctuate based on a setup for daytime or a setup for night obtained by said selecting part.

[0013](2) Constitute an indicator of the above (1) so that a screen display for performing an operation instruction, a check of operation, etc. of navigation may be performed.

[0014](3) A display member of an indicator of the above (1) or the above (2) is formed with a display element which carries out spontaneous light, and constitute a control part of the above (1) or the above (2) so that display luminance of said display member may be made to fluctuate based on a setup for daytime or a setup for night obtained by said selecting part.

[0015](4), [a display member of an indicator of the above (1) or the above (2)] It comprises a Lighting Sub-Division member which illuminates the back or the side of a liquid crystal display element and this liquid crystal display element, and a control part of the above (1) or the above (2) is constituted so that illuminance of said Lighting Sub-Division member may be made to fluctuate based on said setup for daytime, or said setup for night.

[0016](5) Constitute a selecting part of the above (1) or the above (2) so that a judgment of

said setup for daytime and said setup for night may always be performed.

[0017]

[Mode for carrying out the invention] Hereafter, an embodiment of the invention is described in detail using drawing 1 thru/or drawing 3. Drawing 1 is a circuit block diagram of a navigation device for mount by 1 embodiment of this invention, CPU1 for controlling the whole device complexly is provided, and "the loudspeaker 2, the indicator 3, the input part 4, the CD-ROM reading unit 5, GPS transmitting and receiving part 6, and D-RAM7" are connected to this CPU1.

[0018] This loudspeaker 2 outputs course guide voice guidance to a user, and, [the indicator 3] Display an arrow etc., in order to map-display and course guide, and, [the input part 4] Are for a user to perform the operation and a setup of selection which are made into the purpose, and, [the CD-ROM reading unit 5] Reading the road map data stored in CD-ROM, GPS transmitting and receiving part 6 is because the electric wave for positioning from a GPS Satellite is received, self-vehicle position data and the present time information are obtained and D-RAM7 stores various data temporarily.

[0019] Map display capabilities and a day-and-night judgment function can be giving CPU1. May change the indicator 3 by making the emission quantity according to the substantial display luminance of the display performed using a display member to spontaneous light or auxiliary luminescence fluctuate, and, [GPS transmitting and receiving part 6] Self-vehicle position data is obtained from the geographic coordinate data produced by receiving the electric wave for positioning from a GPS Satellite, and it has a clock circuit part which obtains the present time information, and a calendar circuit part which obtains calendar data.

[0020]. Were obtained from each of the clock circuit part and calendar circuit part which GPS transmitting and receiving part 6 has. [the selecting part which chooses said setup for daytime, and said setup for night based on correlation with geographic coordinate data, the present time information, and calendar data] It is a day-and-night judgment function of CPU1, and the control facility which makes the substantial display luminance of the display member of the indicator 3 fluctuate based on a setup for daytime or a setup for night obtained by this selecting part can be giving CPU1.

[0021] Therefore, as shown in drawing 2, geographic coordinate data of its present location is detected by GPS transmitting and receiving part 6 at Step S1, and first. The present time information and calendar data are detected, the data is stored in D-RAM7, a map display is made at the following step S2, and a day-and-night judgment function is started at the following step S3.

[0022]. This day-and-night judgment function should do the present time information detected with geographic coordinate data, and calendar data based on taking out from D-RAM7 with GPS transmitting and receiving part 6. A judgment of "daytime ?" is first made at Step S4, and,

[like / when it is Yes / the bright display a which a daytime screen, i.e., substantial display luminance by the indicator 3, is made bright, and it shows typically to drawing 3 at Step S5 at "a setup for daytime"] Even if it is in a bright outdoor daylight state, it enables it to recognize the contents of a display visually certainly, and in No, it progresses at Step S4 at Step S6.

[0023]Step S6 judges "head light lighting ?", and, in No, [?] [Step] [like the bright display b which substantial display luminance by the indicator 3 is made bright, and shows typically to drawing 3 at Step S5 at "a setup for daytime"] It is considered as the same thing as the above-mentioned bright display a, and even if it is in a bright outdoor daylight state, it enables it to recognize the contents of a display visually certainly.

[0024]Even if the substantial display luminance by the indicator 3 is in a dark outdoor daylight state in Step S7 like the low-intensity display c which it is made bright and is typically shown in drawing 3 at "a setup for night", it enables it to recognize the contents of a display visually certainly at Step S6 in Yes.

[0025]Therefore, change and sunrise of daylight hours by a season since it is carried out based on the geographic coordinate data and the present time information based on GPS transmitting and receiving part 6, and calendar data regardless of ON and OFF of a light switch, Since it corresponds to change of sunset time correctly and "a setup for daytime" and "a setup for night" are moreover performed also corresponding to change by a geographic coordinate, It enables it to recognize the contents of a display visually certainly, without a display being too dazzling even if it is in a dark outdoor daylight state, and enables it to recognize the contents of a display visually certainly in any [the case of a bright outdoor daylight state, and in the case of a dark outdoor daylight state] case.

[0026]When the display member in which spontaneous lights of the display member which forms the indicator 3, such as a cathode-ray tube, are possible is used, Using the display member in which spontaneous lights, such as a liquid crystal element, are impossible, the illumination light is applied, and it may be used from the back or the side, and is made a suitable thing also in which member corresponding to the mode in which display luminance qualitative as a matter of fact is two, daytime/night.

[0027]

[Effect of the Invention]Since it constitutes from the above explanation according to the navigation device for mount by this invention so that a GPS transmitting and receiving part, a clock circuit part, a calendar circuit part, a selecting part, and a control part may be provided so that clearly, Change and sunrise of daylight hours by a season since it is carried out based on geographic coordinate data, the present time information, and calendar data regardless of ON and OFF of a light switch, Since it corresponds to change of sunset time correctly and "a setup for daytime" and "a setup for night" are moreover performed also corresponding to change by a geographic coordinate, It enables it to recognize the contents of a display visually certainly,

without a display becoming dark too much, even if it is in a bright outdoor daylight state. It enables it to recognize the contents of a display visually certainly, without a display being too dazzling even if it is in a dark outdoor daylight state, and enables it to recognize the contents of a display visually certainly in any [the case of a bright outdoor daylight state, and in the case of a dark outdoor daylight state] case.

[0028] Since geographic coordinate data is considered and a setup for daytime of display luminance and a setup for night of the indicator are performed, Amendment by the geographic coordinate of the place which is carrying out vehicle running is made, and when it is in a bright outdoor daylight state, a display becomes dark too much and are sufficient, In the case of a dark outdoor daylight state, a display is not too dazzling, and since time required to check the contents of a display is very slight and ends, it is contributing [can concentrate on original operation and]-to safe driving size, and it can operate the navigation device for mount efficiently.

[0029] Therefore, according to this invention, the brightness of a display of the navigation device for mount regardless of the on/off state of a light switch, And amendment by the current position (geographic coordinate) of vehicles can be performed, "a setup for daytime" and "a setup for night" can be performed automatically, and the navigation device for mount which can carry out visual recognition of the contents of a display quickly can be provided.

[Translation done.]